

54 Investigating Human Traits



Some children look very similar to one of their biological parents. Some appear to be more of a blend of both parents, while others don't look very much like either parent. What are the reasons for this variation in family resemblance? What causes variation among people in general? You will look at six different human **characteristics**, such as eye color, to study human variation. Each of these characteristics can occur in different versions, or **traits** (TRATES).



CHALLENGE



How much variation is shown by the students in your class?

MATERIALS



For each pair of students

- 1 meter stick, tape measure, or height chart



For each student

- 1 Student Sheet 54.1, "Human Traits: Group Results"
- 1 Student Sheet 54.2, "Human Traits: Class Results"
- 1 piece of PTC paper
- 1 piece of control paper
- 1 sheet of graph paper

PROCEDURE



TONGUE ROLLING

1. Working with your group, decide whether each person's eyes are blue, gray, green, brown, or hazel (hazel eyes are a very light brown with yellow or green tones). If a person's eyes are difficult to classify, choose the color that is closest. Record your results on Student Sheet 54.1, "Human Traits: Group Results."
2. Try to roll your own tongue into a U-shape similar to that shown at left. On the student sheet, record who can and who cannot roll his or her tongue.
3. Try to cross all the fingers of the hand you normally write with as shown below. You may use your other hand to help position the fingers. You should begin by crossing your pointer finger over your thumb, then try to cross your middle finger over your pointer finger. Continue trying to cross each finger, one by one, on top of the next finger. On the student sheet, record who can and who cannot cross his or her fingers like this.
4. Working with a partner, use a meter stick or height chart to measure each other's height in centimeters (cm). Round to the nearest 5 cm and record the results on the student sheet.



FINGER CROSSING

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5. Working with a partner, use a meter stick or measuring tape to measure each other's arm span in centimeters (cm). Obtain the arm span by spreading your arms out sideways as far as possible, and having your partner measure from the tips of the fingers on one hand to the tips of the fingers on the other hand, as shown in Figure 3. You may have to ask another student to help you hold the meter stick or measuring tape. Round to the nearest 5 cm and record the results on the student sheet.

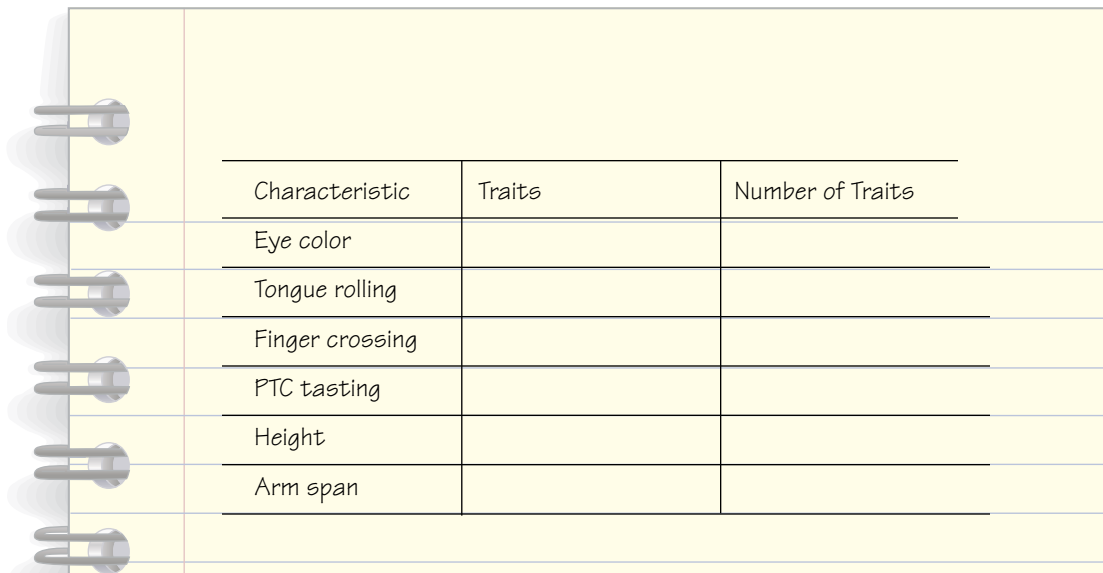


MEASURING ARM SPAN

6. Obtain one piece of plain paper and one piece of PTC paper from your teacher.
 - a. Place the piece of plain paper on your tongue and move it around to be sure it mixes with your saliva. Then remove and discard the piece of paper as directed by your teacher.
 - b. Do the same thing with the PTC paper. Record whether the PTC paper tastes different from the plain paper. If it tastes different, also record whether the taste is mild or strong.
7. Complete Table 1, "Group Results Summary," on Student Sheet 54.1. Note that you do not have to record totals for the height and armspan.
8. Have one person report your group's results to your teacher.
9. Record the class totals on Student Sheet 54.2, "Human Traits: Class Results."
10. Prepare a bar graph of the class data of one of the traits, as assigned by your teacher. Be sure to label your axes and title your graph.

ANALYSIS

1. For each of the six characteristics you studied, how many versions, or traits, are observed in your class? Copy a table like the one below into your science notebook. (For example, if your class has people with brown and blue eyes only, then you would fill in the first column with "eye color," the second column with "brown and blue," and the third column with the number "2" to represent the two colors observed.)



Characteristic	Traits	Number of Traits
Eye color		
Tongue rolling		
Finger crossing		
PTC tasting		
Height		
Arm span		



2. Which of the traits you investigated—for eye color, tongue rolling, PTC tasting, crossing all your fingers, height, and arm span—do you think people inherit from their biological parents? Explain.



3. If a trait is not inherited, what else might cause it? Explain or give some examples.



4. If you studied more people in your community, would you expect to find more traits for each characteristic? Explain your answer.

5. **Reflection:** Who do you most look like in your family? Explain.

EXTENSION

Gather data on ten more people who are not in your class and bring the results to class to add to the totals.